

In re Patent Application of:  
**PORTO ET AL.**  
Serial No. 10/701,150  
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**In the Specification:**

Please replace paragraph [0034] beginning at page 13,  
with the following rewritten paragraph:

[0034] In view of the foregoing background, an object of the present invention is to provide a hardware quantum gate for running a quantum algorithms in a very fast manner.

Please replace paragraph [0059] beginning at page 17,  
with the following rewritten paragraph:

[0059] The quantum gate of the invention is suitable for a fast running quantum algorithm applied over a set of input vectors, such as for example, decision making or data search routines based on the Deutsch-Jozsa's algorithm or the Grover's algorithm. It is composed of a superposition subsystem carrying out a linear superposition, an entanglement subsystem carrying out an entanglement operation, and an interference subsystem carrying out an interference operation according to the quantum algorithm to be implemented.